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CORRESPONDENCE
INCOMING LETTER

FEDERAL ENERGY REGULATORY COMMISSION

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December 1 1994

In reply refer to
DOE Dams - Rocky Flats
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Ms Cheryl L Row
Site Support & Security
U S Department of Energy
Rocky Flats Area Office
P O Box 928
Golden CO 80404

Dear Ms Row

I am pleased to enclose a copy of our Operation Inspection Report for DOE-Rocky Flats Dams A-4 B-5 and C-2 The field inspection of these dams was conducted on September 21 1994

A summary of our findings is given in Section C of the report We also informed you of our findings soon after the inspection by letter dated October 13 1994 We look forward to receiving a plan and schedule for completing the remedial works We will also appreciate your supplying us with embankment cross sections as suggested under paragraph A (2) entitled "Instrumentation"

We understand that a DOE review of Geotechnical Analysis Report for Dam Upgrades (Dams A-4 B-5 and C-2)' by the COE has been completed and that the COE is in the process of completing its final report Please submit a copy of the final report when completed for our review You are also reminded to supply us documents already requested These are (i) 'Formal Guidance for Inspection of Dams report prepared by EG&G (ii) your response to the recommendations made by the SFRO by our letter dated October 13, 1994 and (iii) a copy of EG&G computations to support the conclusion that the 100-year flood can safely pass with the restricted waterway of Dam C-2 spillway channel and that it is not necessary to relocate the water treatment plant presently located in the channel

We also understand that the Dam Safety Periodic Inspection by the COE that was due in FY 1994 has been postponed due to budget constraints Such in-depth periodic inspections are considered equivalent to the Safety Inspections by an Independent Consultant in accordance with Part 12 Subpart D of Code of Federal Regulations (CFR) We would like to be advised as to when this inspection will now be scheduled

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RECORDS
NOTES P 1624
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ADMIN RECORD

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The next operation inspection of Rocky Flats Dams by my staff engineer is tentatively scheduled for August/September 1995. Your Dams A-2 A-3 C-2 and the Sanitary Landfill Dam will be inspected during that visit.

Sincerely



Noel Folsom P E
Regional Director

Enclosure

cc Mr Thomas McSpadden
EH-331
270 Corporate Center
U S Department of Energy
Washington D C 20585

NON - PUBLIC

Operation Inspection Report
for
Department of Energy

Inspected by

FEDERAL ENERGY REGULATORY COMMISSION

San Francisco Regional Office

Date of Inspection September 21, 1994

Dam Name Dams A-4, B-5 & C-2

Location North and So Forks, Walnut Creek Jefferson Co CO
(River or reservoir) State

Department of Energy (Facility Name) Rocky Flats

Features of Dam and Impoundment Inspected All

Inspected by Tilak Dhir

Accompanied by Ms Cheryl Row of DOE, Ms Pamela Lee, Mr Robert Stevens and staff representing DOE operating contractor, EG&G - Rocky Flats, Inc

Weather Warm and cloudy

Summary

This report contains the results of the fifth operation inspection of Dams A-4, B-5 and C-2 included in the Rocky Flats Surface Water Control Project, and located within the boundary of the Rocky Flats Plant (RFP)

The condition of the three dams with respect to safety appears to be satisfactory. No condition was observed that would present an imminent danger to the public, operating personnel or to any of the structural features of the dams. The dams are being operated and maintained in accordance with written procedures with the primary objectives of keeping sufficient reservoir capacity for flood attenuation and retention of impounded waters until treated and free of contaminants.

(Continued on page 2)

Submitted DEC 1 1994

Tilak Dhir, P E
Civil Engineer

SFRO recommendations are listed in Paragraph C on page 11 of the report

Figure 1 shows the general location of the Rocky Flat Plant figure 2 shows the site drainage pattern and figure 3 is a schematic of the holding ponds Photographs taken during the inspection are attached at the end of the report

U S DEPARTMENT OF ENERGY
ROCKY FLATS PLANT DAMS

DATA SHEET

A DAMS

	<u>Crest Length</u> <u>(feet)</u> (meters)	<u>Crest Elev</u> <u>(feet)</u> (meters)	<u>Maximum Height</u> <u>(feet)</u> (meters)	<u>Maximum Normal Reserv Elev</u> <u>(feet)</u> (meters)	<u>Maximum Normal Reservoir Capacity</u> <u>(acre-feet)</u> (cubic meters)
A-4	1 050 (320)	5764 (1756 9)	42 (12 8)	5 757 5 (1 754 9)	95 (117 182)
B-5	550 (168)	5 810 (1770 9)	47 (14 3)	5 804 (1 769 0)	73 (90 045)
C-2	1 200 (366)	5 774 5 (1760 5)	33 (10 0)	5 765 (1 757 2)	69 (85 112)

B SPILLWAYS

	<u>INVERT ELEVATION</u> Feet/Meters	<u>MAX WATER DEPTH</u> Feet/Meters	<u>MAXIMUM FLOW</u> CFS/m ³ /sec
A-4	5 757 5/1,754 9	6 5/ 1 98	6 640/ 188
B-5	5 804 /1 769 0	5 7/ 1 74	3 191/ 90
C-2	5 765 /1757 2	9 4/ 2 87	19 079 /540

C OUTLET WORKS

	<u>INVERT ELEVATION</u> Feet/ Meters	<u>OUTLET ELEVATION</u> Feet/ Meters	<u>PIPE LENGTH</u> Feet/ Meters
A-4	5 728/ 1745 9	5 718/ 1742 8	203/ 62
B-5	5 782/ 1762 4	5 756/ 1754 4	242/ 74

U S Department of Energy
Rock Flats Plant Dams

OPERATION REPORT

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Introduction

There are twelve dams at the DOE-Rocky Flats Plant as a part of its Surface Water Control Project. In accordance with the Memorandum of Agreement (MOA) dated September 9, 1990 between the FERC and the DOE, only six of these are subject to the FERC inspection. Of these six dams, except for Dam C-2, all have a LOW downstream hazard potential classification. Dam C-2 has a SIGNIFICANT downstream hazard potential classification. In accordance with FERC Regulations, all high and significant downstream hazard potential dams are to be inspected once a year and all low downstream hazard potential dams of the size and capacity at the Rocky Flats Plant (RFP) are to be inspected at least every two years. Dams A-4 and B-5 were last inspected in August 1992. These are therefore included in the current inspection. (For a background to the MOA and the purpose of the Rocky Flats Surface Water Control Project, see SFRO Operation Report dated November 15, 1990.)

A Safety of the Project

1 Dams, Dikes, and Appurtenant Structures

The condition of the three dams with respect to safety appears to be satisfactory. No condition was observed during the inspection that would present an imminent danger to the public operating personnel or to any of the structural features of the dams. Based on a visual examination, the condition of the three dams and their appurtenant structures is as follows:

a. Dam A-4 - The 42-foot-high (12.8 m) embankment type dam (Photo 1) is the last of four water detention/control structures on North Walnut Creek. Storm water runoff is currently retained in the reservoir for extended periods of time until release downstream can be made. Water is also pumped from pond (reservoir) B-5 into pond A-4 (Photo 2). On the day of inspection, the pond was reported to be at 20% of its full capacity. The dam is generally in a satisfactory condition except for the vegetation growth on the upstream face near the crest (Photo 3). The dam was inspected by walking along the crest, the downstream face, and the toe. The dam abutments and groins were observed from the top and the toe of the dam. The exposed portion of the upstream slope, looking north east, is seen in Photo 4. The slope lines were neat with no evidence of slumping, sloughing, or other deterioration. The downstream face was similarly in a good condition (Photo 5). The crest of the dam appeared level and no evidence of slumping, cracking, or settlement was noted (Photos 6 & 7). A few rodent holes were noted along the downstream slope.

The ungated, open channel excavated earth spillway (Photo 8) located adjacent to the left abutment of the dam appeared in good condition overall with no erosion or sloughing observed. The spillway has a relatively small longitudinal slope. No excessive growth of vegetation was noted in the spillway channel.

The outlet works consists of an 18-inch (46 cm) reinforced concrete pipe (RCP) which discharges into a concrete stilling basin. Heavy vegetative growth in and around the outlet structure (Photo 9) prevented the observation of any telltale signs of piping around the outlet pipe. The visible portion of the structure however appeared in a good condition. No cracks or spalls in the concrete were noted. The outlet works channel also had heavy vegetation growth (Photo 10). The shut-off gate is located at the downstream end of the conduit. This is not a desirable feature since the conduit is continuously pressurized which greatly increases the risk of leakage through pipe joints which could cause piping along the outside of the conduit.

b Dam B-5 - The 47-foot-high (14 m) embankment type dam is the last of the five water detention/control structures on South Walnut Creek. Storm water runoff is currently retained in the pond for extended periods of time until water can be pumped to Pond A-4 for release. The dam was modified in 1984 after it showed signs of distress in 1983. The modifications included the construction of two berms buttressing the upstream slope. The modified section of the dam consists of a 1V 5H slope below El 5788 and a slope of 1V 2 5H above El 5788. The outlet works inlet structure was modified to conform to the new section. (For further details of the 1983 distress and repairs see the SFRO Operation Inspection Report dated November 15 1990)

The dam was inspected by walking along the crest, the downstream face, the toe and along the groins. On the day of inspection, the pond was reported to be at about 49% of its full capacity. The dam appeared structurally sound. No signs of slumping or settlement were noted. The visible portion of the upstream slope (Photo 11) was found to be in good condition with adequate riprap cover and no noted visual signs of movement or deficiencies. The downstream slope (Photo 12) was found to be in good condition with good grass cover and no visual depressions or cracking were observed.

A 8-inch (20 cm) PVC pipeline has been located across the crest of the dam (Photo 13). This pipeline is used to divert water from dam C-2 to dam A-4 to meet storage requirements. Placing a pipeline on a dam is generally a poor practice, because a leak in the pipeline could cause significant erosion of the embankment. There is excessive vegetative growth on the upstream face near the crest (Photo 13).

As for Dam A-4, excessive vegetation was also observed near the outlet area and the channel (Photos 14 & 15) The concrete of the outlet structure appeared to be in a good condition

The spillway (Photo 16) is an 80-foot (25 m) wide earthcut trapezoidal section and appeared to be in good condition The water treatment plant for this pond that had been installed in the middle of the spillway approach channel encroaching substantially on the waterway has since been removed as recommended by the SFRO after its 1992 inspection

c Dam C-2 - The 33-foot-high (10 m) embankment type dam is the second of the two water detention/control structures on Woman Creek It holds 100-year Plant runoff in the Woman Creek area and passes greater flows downstream On the day of inspection the pond was reported to be at about 22% of its full capacity The dam was inspected by walking along the crest the downstream face the toe and along the dam groins The slope lines on the upstream face appeared neat and no degradation of the slope protection stones was noted (Photo 17) Excessive vegetative growth was noted on the upstream slope near the crest (Photos 18 & 19) The crest needs regravelling and regrading due to tire ruts formed by vehicular traffic (Photo 20) Note the PVC pipe installed on the top of crest as in the case of Dam B-2 Excessive vegetation nearly covered the outlet works (Photo 21) The visible portions of the concrete structure however were in good condition

The spillway is a 250-foot (76 m) wide earthcut trapezoidal section on the dam's right abutment (Photo 22) and looked good and well maintained As at Dam B-5 a water treatment plant has been installed in the spillway approach channel (Photo 23) Also a roadway, slightly above the general grade level, has been constructed in the spillway channel During the last inspection the SFRO had asked that the encroaching water treatment plant be relocated out of the spillway channel It was reported that the engineering group of EG&G the DOE operating contractor, has reviewed the hydrology for Dam C-2 and concluded that a 100-year flood can be safely passed with the restricted waterway, and, as such there is no need to relocate the plant as recommended by the SFRO after its 1992 inspection DOE has been asked to submit EG&G's computations for our review of its methodology and assumptions made for analysis

2 Instrumentation

Open well type piezometers are installed at all three dams Piezometers at Dam B-5 were installed after the 1984 modifications (for details of modifications see the SFRO Operation Inspection Report dated November 15 1990) As a part of the in-depth geotechnical investigations by the Corps of Engineers piezometers were installed in August 1991 at Dam A-4

and C-2 The piezometer tips are stated to be located at approximate top of bedrock" The instrumentation data from these piezometers were reviewed in SFRO Operation Report, dated December 31 1992

Since then the COE has prepared a "Draft" copy of "Geotechnical Analysis Report for Dam Upgrades (Dams A-4, B-5 and C-2)" This resulted in installing a number of piezometers and inclinometers on the three dams during June and July 1994 listed on Attachment 1 Telemetry system has also been installed for automatic readings The results from piezometers installed prior to 1994 have been reviewed in the SFRO Operation Report dated December 31 1992 Results from the recently installed piezometers in 1994 were reviewed at the exit meeting after the inspection Attachment 2 shows the readings of newly installed piezometers against the pond levels for all the three dams To better interpret the data we should have cross-sectional plots of embankments showing the piezometer locations DOE/RFO is being requested to supply such cross sections Following are our review comments

Dam A-4 Four new piezometers were installed in July 1994 Two of these A4-94-02 and A4-94-03 are at the crest and the other two A4-94-11 and A4-94-12 are at the toe of the dam Enough data from these four piezometers have not been collected to indicate any definite correlation with the pond level In fact during the period of 8/8/94 to 8/15/94 the reservoir level rose by 7 feet, but the piezometer readings did not respond Actually for A4-94-03 it went down by a couple of feet We shall need to have more data before any conclusions can be drawn Perhaps the instruments also need to be checked to see if these are functioning properly

The reservoir levels indicate that the reservoir was being operated at substantially higher capacity and over a longer period of time during the data period than originally intended The highest elevation has been as high as 54% full

Dam B-5 Three new piezometers were installed in June 1994 Two of these B-5-94-05 and B5-94-06 are at the crest and the third B5-94-11 is at the toe of the dam See Photo 24 for installed piezometers inclinometers and remote telemetry system As for Dam A-4 very little data are available for these piezometers to arrive at any conclusions Readings for B5-94-06 appear to be going down as the pond level goes up Pressure readings for B5-94-05 appear to follow the pond level variation

As for Dam A-4 the reservoir levels indicate that the reservoir was being operated at higher capacity than originally intended The highest elevation has been as high as 60% full

Dam C-2 Five additional piezometers were installed during June 1994. Two of them, C2-94-02 and C2-94-03 are at the crest and the other three, C2-94-11, C2-94-12a and C2-94-13a are at the toe of the dam. A view of the telemetry system at C-2 is seen in photo 25. The readings for these piezometers appear to be following the reservoir level in the dam, though more data will be required to arrive at any conclusions.

The reservoir levels for Dam C-2 have also been higher than originally intended. The highest elevation has been as high as 33% full.

3 Downstream Hazard Potential

Dams A-4 and B-5 have been classified by the COE as having Low downstream hazard potentials and Dam C-2 as having a 'Significant' downstream hazard potential. Based on field observations made during the inspection, the ratings remain unchanged. DOE and EG&G personnel informed me that a new lake downstream of the Dam C-2, outside the Rocky Flat Plant jurisdiction, is being constructed by the City of Westminster. Upon completion of the lake, the State Engineer is likely to downgrade the downstream hazard potential of Dam C-2 from 'Significant' to 'Low'. DOE personnel were advised that until such time as the downstream hazard potential evaluation is revised, the FERC will continue to treat this dam as having a 'Significant' downstream hazard potential, at which time the FERC will review the recommendation by the State Engineer.

4 DOE'S Inspection Program

The inspection program for the DOE dams is provided at three levels: informal, intermediate, and formal. The informal inspections are made by the DOE plant operating contractor's engineering and maintenance personnel in accordance with the "Inspection and Maintenance Schedule" included in the DOE document "Operation and Maintenance Instructions for Rocky Flats Surface Control Project Dams and Reservoirs". The tabular schedule includes regular weekly or monthly inspections as appropriate and periodic maintenance of various project elements. Observations of monitoring devices also are conducted by the Clean Water Group of EG&G.

All intermediate and formal inspections are made by the U S Army Corps of Engineers, Omaha Division. The intermediate inspections are on a yearly basis. The formal inspections discussed in Paragraph A (5) below are on a five-year basis and accepted by the FERC as analogous to Independent Consultant's Safety Inspections. The frequency of inspections and the staff of the operating contractor, EG&G, appear adequate.

Environmental Protection Management Ecology and Watershed Management group of EG&G is in the process of preparing a "Rocky Flats Dam Inspection Procedure" A draft of the report is under review by DOE personnel and will be submitted to the SFRO when finalized This will further formalize the inspections

5 Consultant's Safety Inspection Reports

Through the use of interagency agreement contracts the COE provides DOE a program of dam safety inspections to bring the dams at the Rocky Flats Plant into compliance with the "Federal Guidelines for Dam Safety" and the regulations of the State of Colorado The COE dam safety program consists of periodic inspections at five-year intervals with annual inspections each year in between FERC considers Periodic Inspections as satisfying the requirements of Independent Consultant's Safety Inspection Report

Dam Safety Periodic Inspection Report No 2 - Rocky Flats Plant July 1989 was reviewed and comments transmitted to DOE-RF by a SFRO letter dated March 19 1991 The next Periodic Inspection Report was scheduled for 1994 but due to budget constraints the COE has postponed it to FY 1995 The report will be reviewed by FERC when received The review will include adequacy of scope and evaluation compliance with criteria and standards and the status of DOE's plan of action for remedial measures

B Operation and Maintenance

The Rocky Flats Plant through its operating contractor EG&G provides operations and maintenance management for the DOE dams in accordance with the Federal Guidelines for Dam Safety Operations of the facilities is guided by written operating instructions Necessary maintenance is performed under written instructions provided by the informal inspections and by the intermediate and five-year formal inspections

1 Dams, Dikes, and Appurtenant Structures

Except for the deficiencies pointed out in this report under paragraph A- Safety of the Project the structures appeared to have been well maintained

2 Spillway Gates and Standby Power

There are no gated spillways on any of the dams under report

3 Power Plants

Not applicable

4 Reservoir

The three dams create relatively small holding ponds ranging in capacity from 69 acre-feet (85,000 m³) to 95 acre-feet (117 000 m³). Except as noted above no vegetation growth around the pond rims or floating debris was noted. The impounded water however is suspected to be contaminated and is purified by filtration before release to the downstream area. Other methods such as evaporation through a sprinkler system are also employed to deplete the reservoirs in advance of the flood season.

5 Records

The Plant operating contractor is reported to have established centralized files on the dams and has instituted routine monitoring of existing instrumentation and storage levels.

6 Emergency Action Plan

The DOE document "Emergency Response Plan for Water Retention Pond Dam Failure for Rocky Flats Plant" (ERP) was reviewed by the SFRO and found deficient. This report is considered as equivalent to FERC's Emergency Action Plan (EAP). The results of the review were transmitted to DOE-RFO by a SFRO letter dated December 2, 1992. The ERP needed a complete revision. Specifically a dam break analysis for dam C-2 has been requested.

During the inspection, Mr. Stevens of EG&G informed Mr. Dhiri that even if the downstream hazard potential of dam C-2 is downgraded from "Significant" to "Low", (see paragraph 3 above) ERP for this dam is still required and EG&G is working on it. The ERP will include a dam break analysis. (At the request of Mr. Stevens of EG&G "Guidelines for Dam Break Studies" was faxed on November 3, 1994).

C Findings and Follow-up Action

The following is a summary of SFRO inspection findings discussed in an exit meeting at the end of the current inspection. In general it was the consensus of opinion that efforts will be made to clear up all the vegetation. DOE/EG&G also stated that it is scheduled to provide upstream control at all the three outlet work pipelines during FY 1995. Subsequent to the inspection EG&G informed that the review by DOE of COE's draft report "Geotechnical Analysis Report for Dam Upgrades (Dams A-4, B-4, and C-2)" has been completed. DOE is scheduled to implement the recommendations in this report during FY 1995. A list of the attendees is appended as Attachment 3. By letter dated October 13, 1994 the DOE-RFO was informed of the

inspection findings Given below is a summary of the findings

Dam A-4

(1) Heavy vegetation growth in the outlet structure area prevents proper inspection for piping along the outlet pile. This as well as vegetation on the upstream face near the crest level should be cut back.

(2) The rodent holes found on the downstream embankment should be filled with an impervious soil material. It is recommended that this be done periodically.

(3) It is recommended that the existing outlet gate be operated on an annual basis. Also an outlet works gate should be installed on the upstream side of the outlet works to reduce risk of piping along the outside of the conduit.

Dam B-5

(1) Excessive vegetation growth exists in and around the outlet structure. It should be cut back.

(2) The PVC pipe on the dam crest should be relocated away from the dam.

(3) An upstream gate for the outlet conduit should be installed and the existing downstream gate be operated on annual basis.

Dam C-2

(1) Excessive vegetative growth at the dam crest level along its upstream side and in and around the outlet works was noted. It should be cut back.

(2) The PVC pipe on the dam crest should be relocated away from the dam.

(3) The water treatment plant and road installed in the spillway approach channel should be relocated in order to reduce potential flow concentrations and to increase spillway capacity.



Photo 1 View of Pond A-4 Dam looking west



Photo 2 View of Pond B-4 transfer line into Pond A-4



Photo 3 View of Upstream slope of Pond A-4 Dam near crest
Note excessive vegetation



Photo 4 Another view of Upstream slope of Pond A-4 Dam Slope
lines were neat with no evidence of slumping
sloughing or degradation

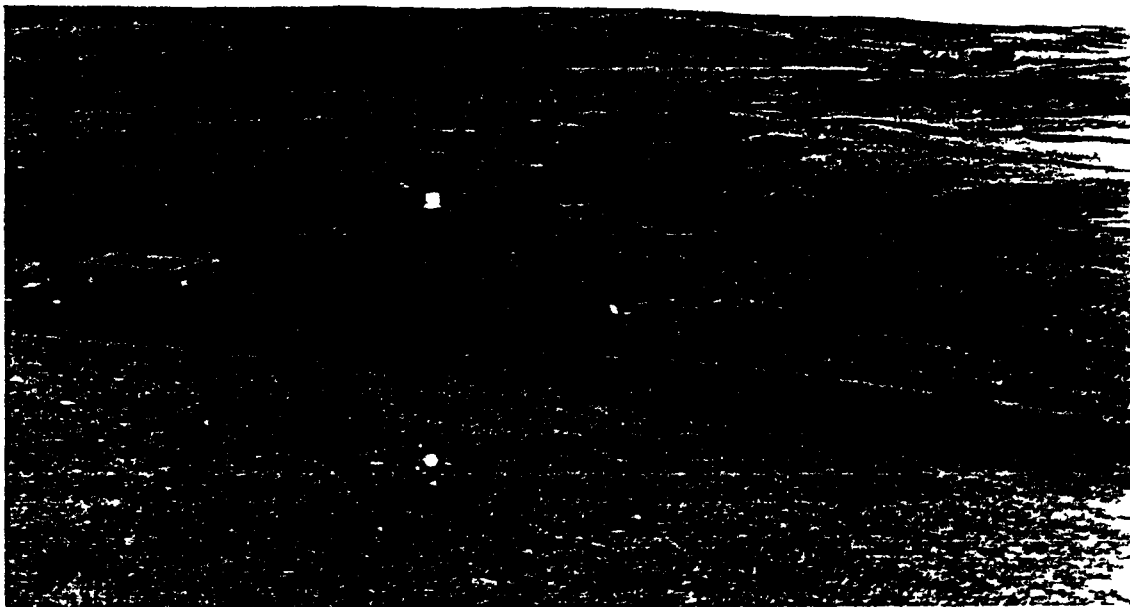


Photo 5 View of Downstream slope of Pond A-4 Dam looking East
Looks good

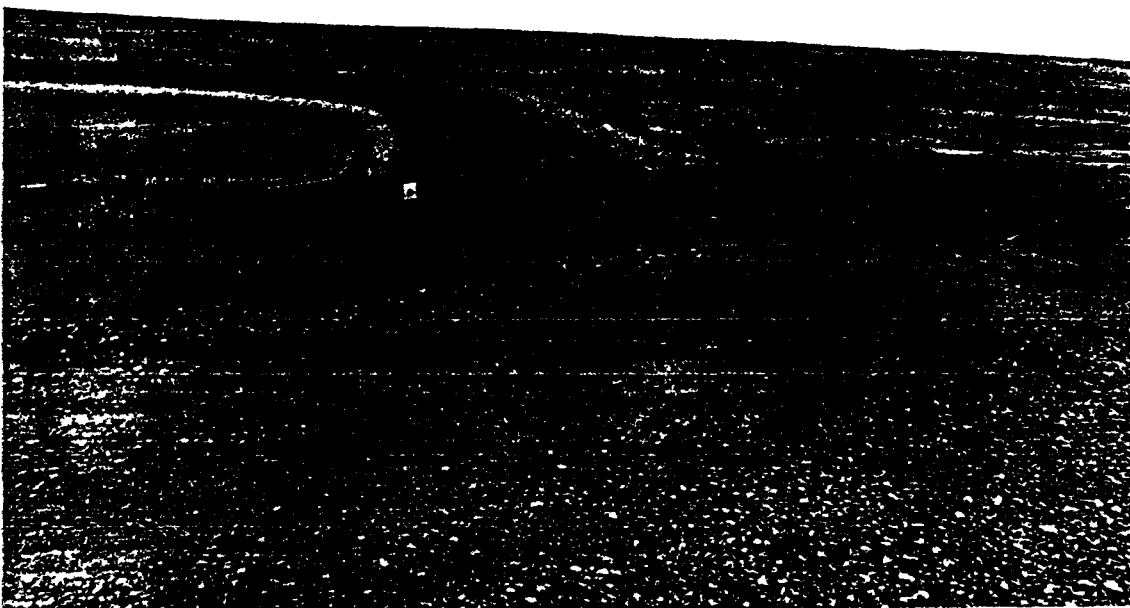


Photo 6 View of Crest Pond A-4 Dam looking North No slumping
or sloughing



Photo 7 Another view of Crest Pond A-4 Dam looking South



Photo 8 View of Spillway and Water Treatment Facility of Pond A-4 Dam The channel looks good with no visible erosion



Photo 9 View of Outlet Works of Pond A-4 Dam Note heavy vegetation

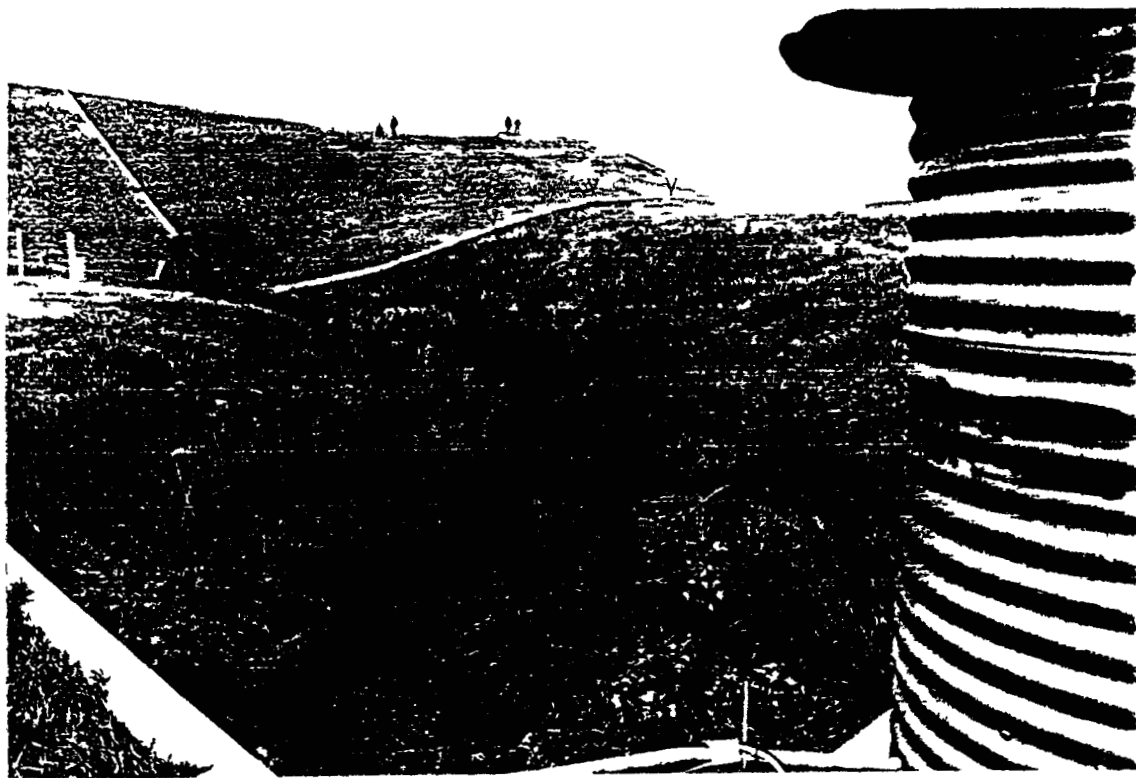


Photo 10 View of Outlet Works Channel Full of vegetation



Photo 11 View of Upstream slope of Pond B-5 Dam Visible portion had adequate riprap cover



Photo 12 View of Downstream slope of Pond B-5 Dam looking east Good grass cover with no visible depressions



Photo 13 View of Upstream slope of Pond B-5 Dam Excessive vegetation growth on the upstream face near the crest

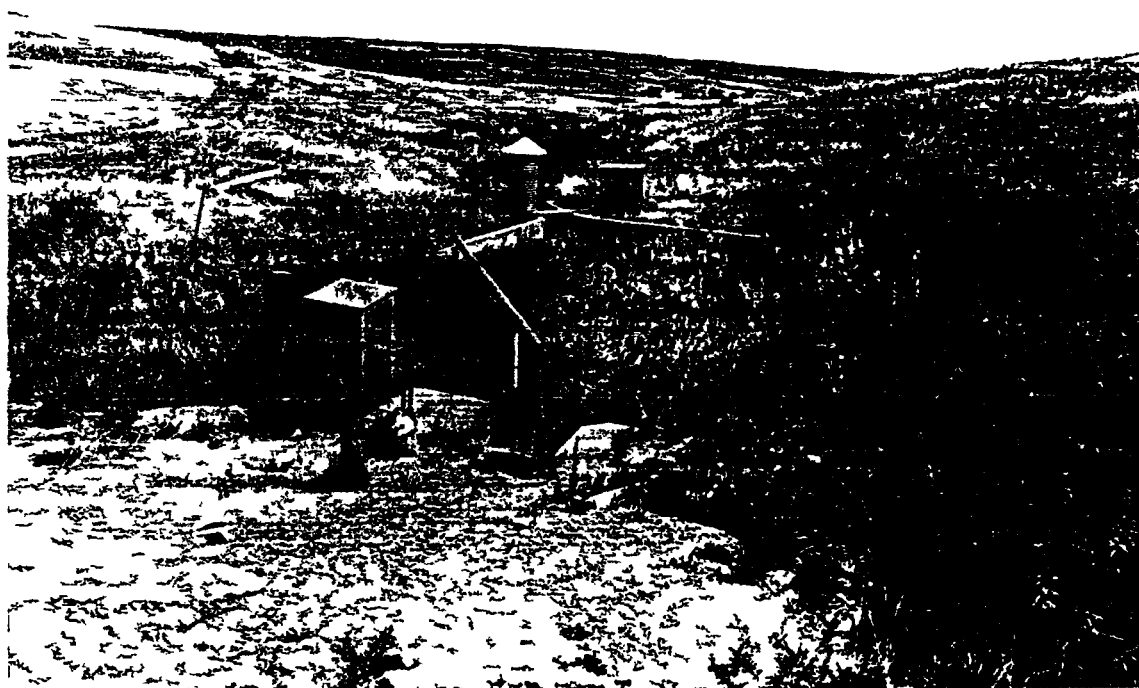


Photo 14 View of the Outlet Works of Pond B-5 Dam looking north east

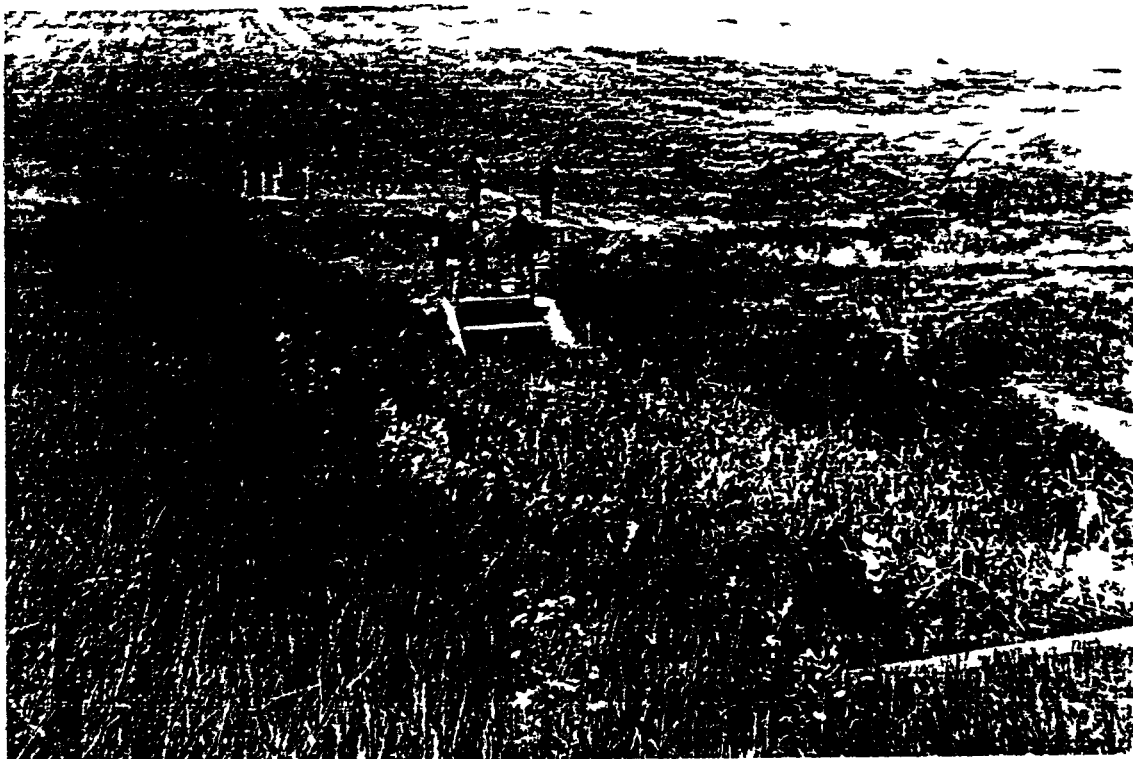


Photo 15 Another view of the outlet works looking south west
The loose soil seen is from installation of
piezometer



Photo 16 View of spillway of Pond B-5 Dam Note removal of
water treatment facility



Photo 17 View of upstream slope of Pond C-2 Dam looking north east Slope lines appeared neat with no visible degradation

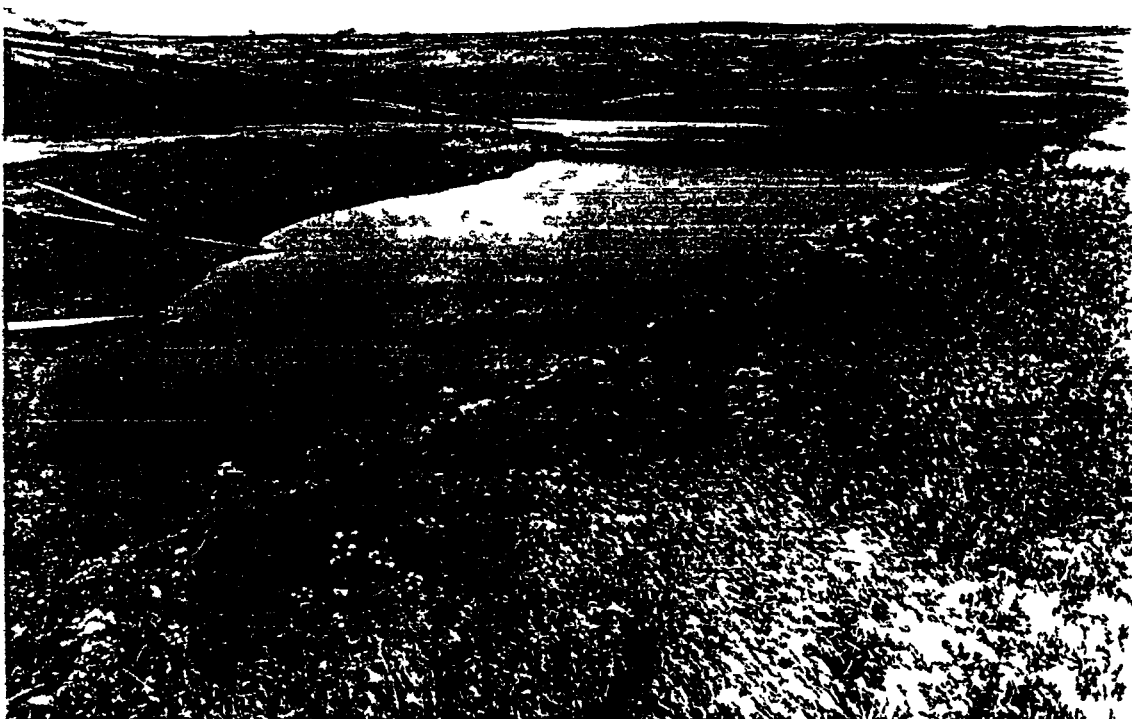


Photo 18 Another view of upstream slope looking north west Note excessive vegetation

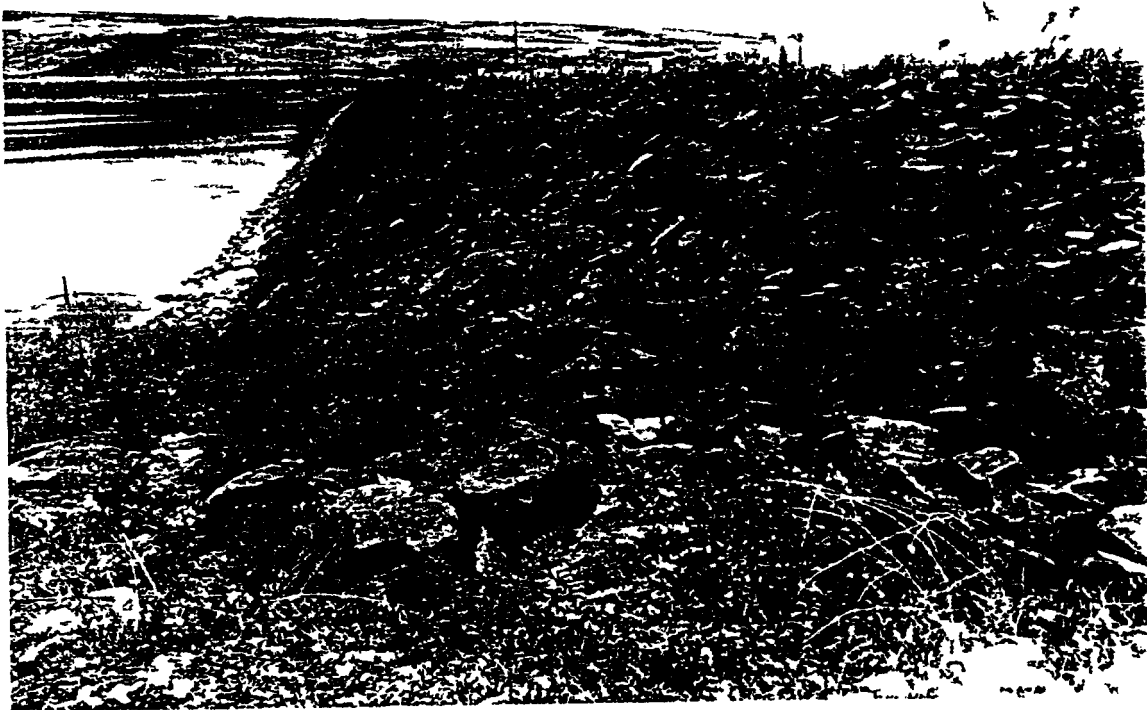


Photo 19 View of upstream slope looking north for Pond C-2 Dam
Note vegetation in the riprap



Photo 20 View of crest of Pond C-2 Dam Crest needs
regravelling and regrading



Photo 21 View of Outlet Works of Pond C-2 Dam Excessive vegetation nearly covers the structure

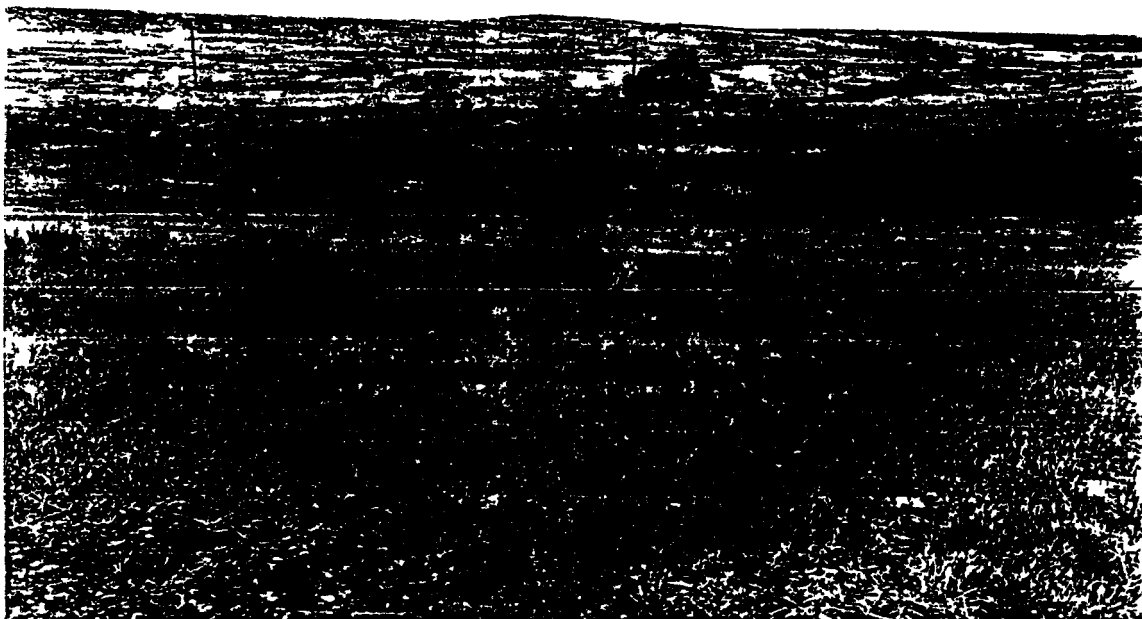


Photo 22 View of Spillway of Pond C-2 Dam looking south east



Photo 23 Another view of the spillway looking south west Note the treatment unit in the spillway channel

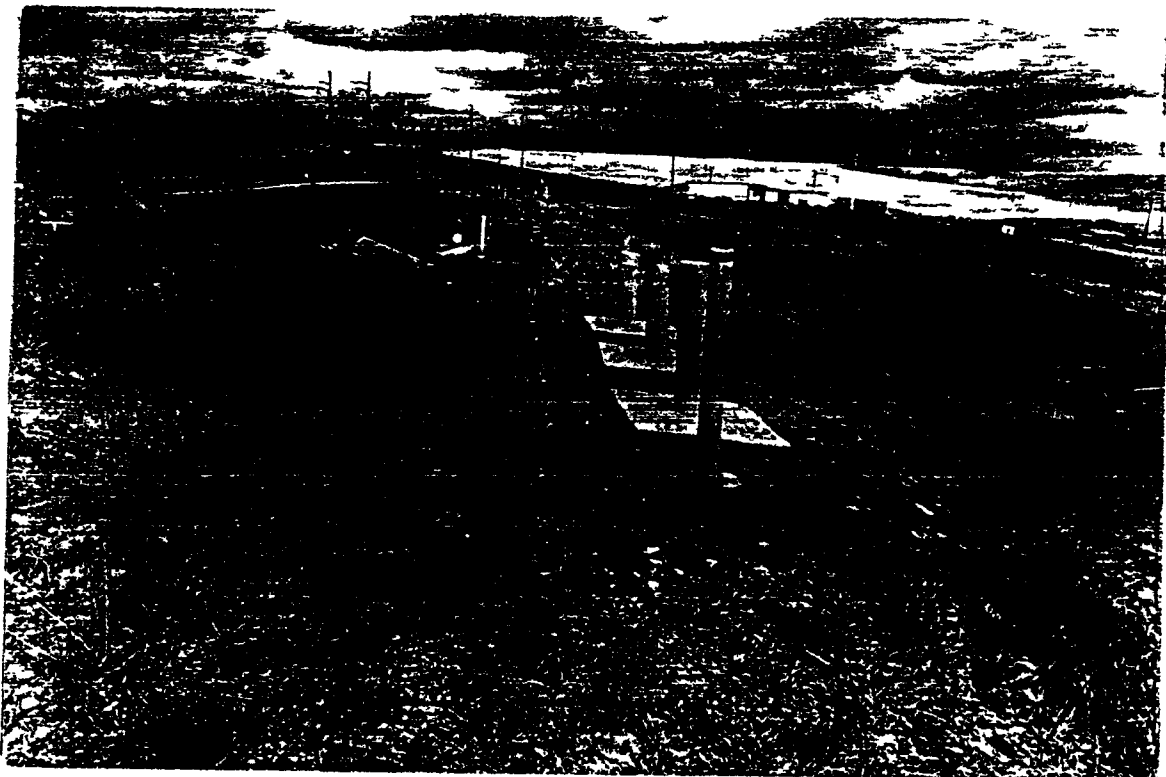


Photo 24 Installation of Piezometers Inclonometers and Remote Telemetry System on crest of Pond B-5 Dam

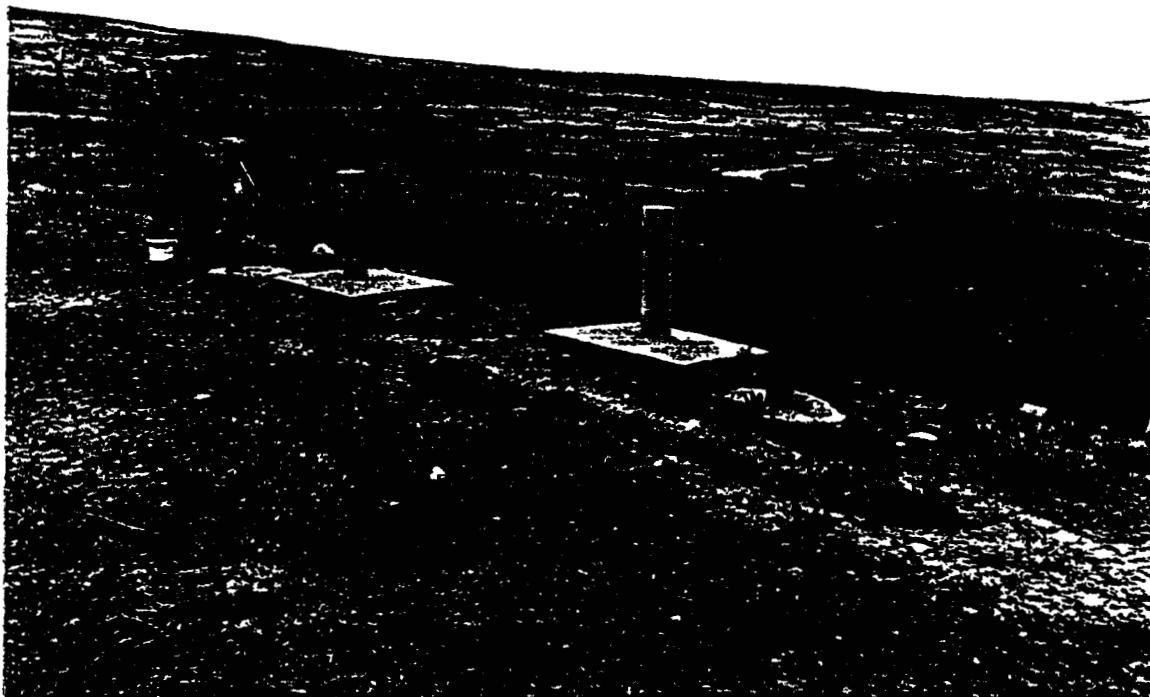
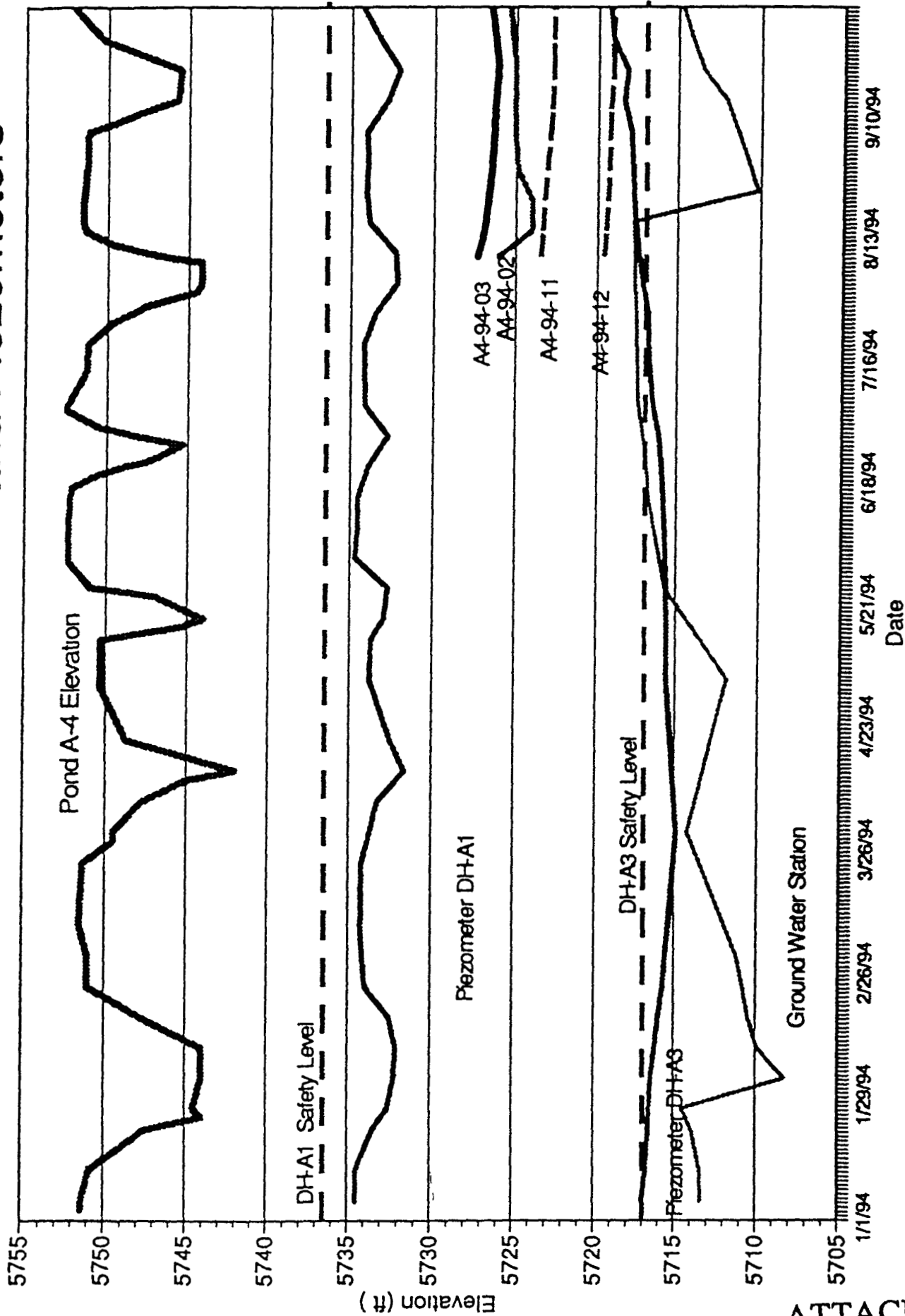


Photo 25 View of Remote Telemetry System at Pond C-2 crest

PIEZOMETERS	LOCATION	DATE COMPLETED
A4 94 02	Crest Dam A 4	7/13/94
A4 94 03	Crest, Dam A 4	7/14/94
A4 94 11	Toe Dam A 4	7/1/94
A4 94 12	Toe Dam A 4	7/1/94
B5 94 05	Crest Dam B 5	6/22/94
B5 94 06	Crest Dam B 5	6/28/94
B5 94 11	Toe Dam B 5	6/30/94
C2 94 02	Crest Dam C 2	6/9/94
C2 94 03	Crest Dam C 2	6/10/94
C2 94 11	Toe Dam C 2	6/17/94
C2 94 12a	Toe Dam C 2	6/20/94
C2 94 13a	Toe Dam C 2	6/17/94

INCLINOMETERS	LOCATION	DATE COMPLETED
A4 I1	Crest Dam A 4	7/15/94
B5 I1	Crest Dam B 5	6/29/94
B5 I2	Crest Dam B 5	6/27/94
C2 I1	Crest Dam C 2	6/13/94
C2 I2	Crest Dam C 2	6/15/94

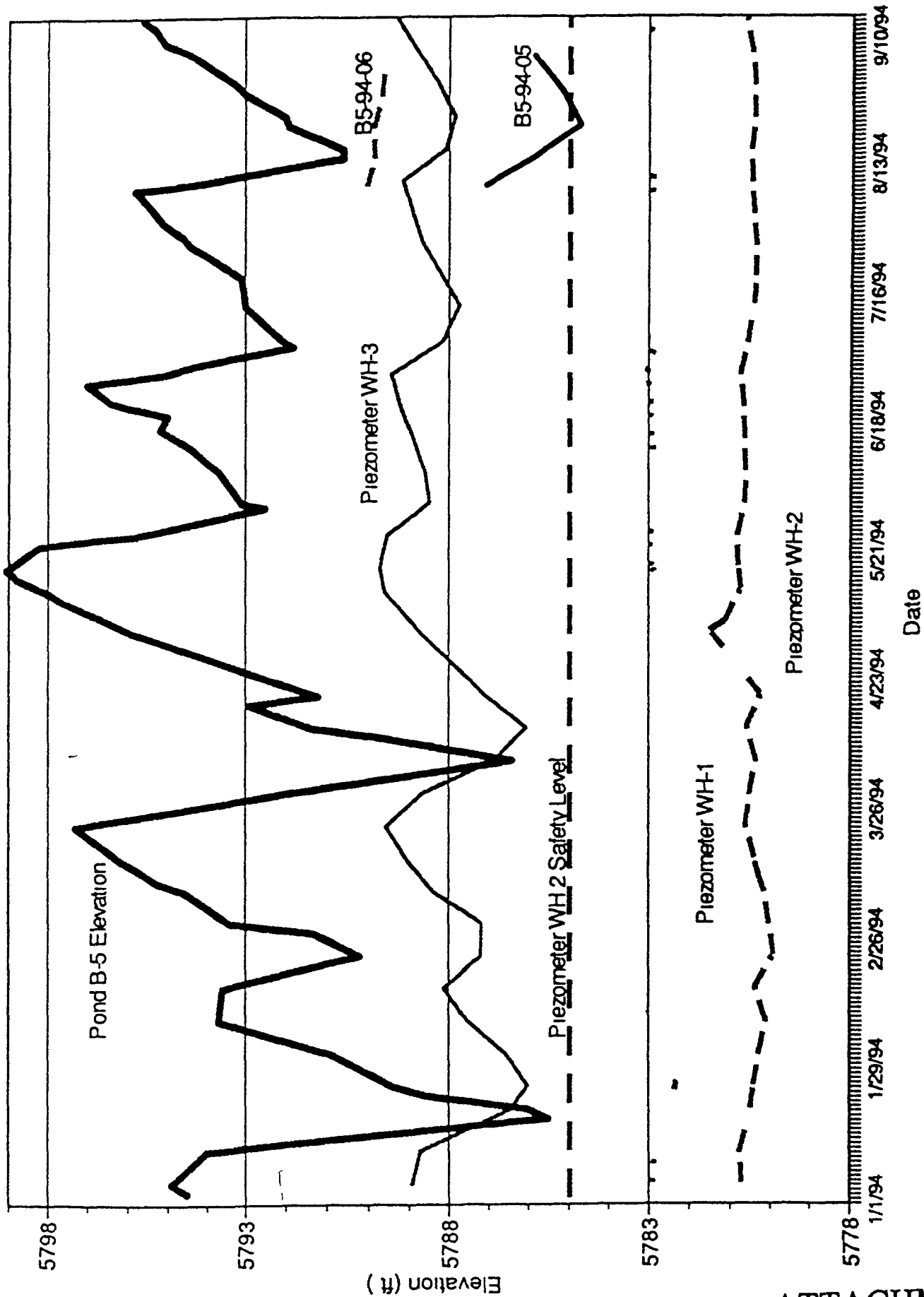
1994 Elevations of Pond A-4 and Piezometers



Piezometer DH-A1 is on the crest of the dam, and Piezometer DH-A3 is on the toe of the dam. Both are centrally located. The Groundwater station is on the toe of the dam, approximately 100 yards north of the dam's center. A4-94-02 is dry measurement indicates bottom of well, fluctuations may be caused by human error measuring line slack

SW

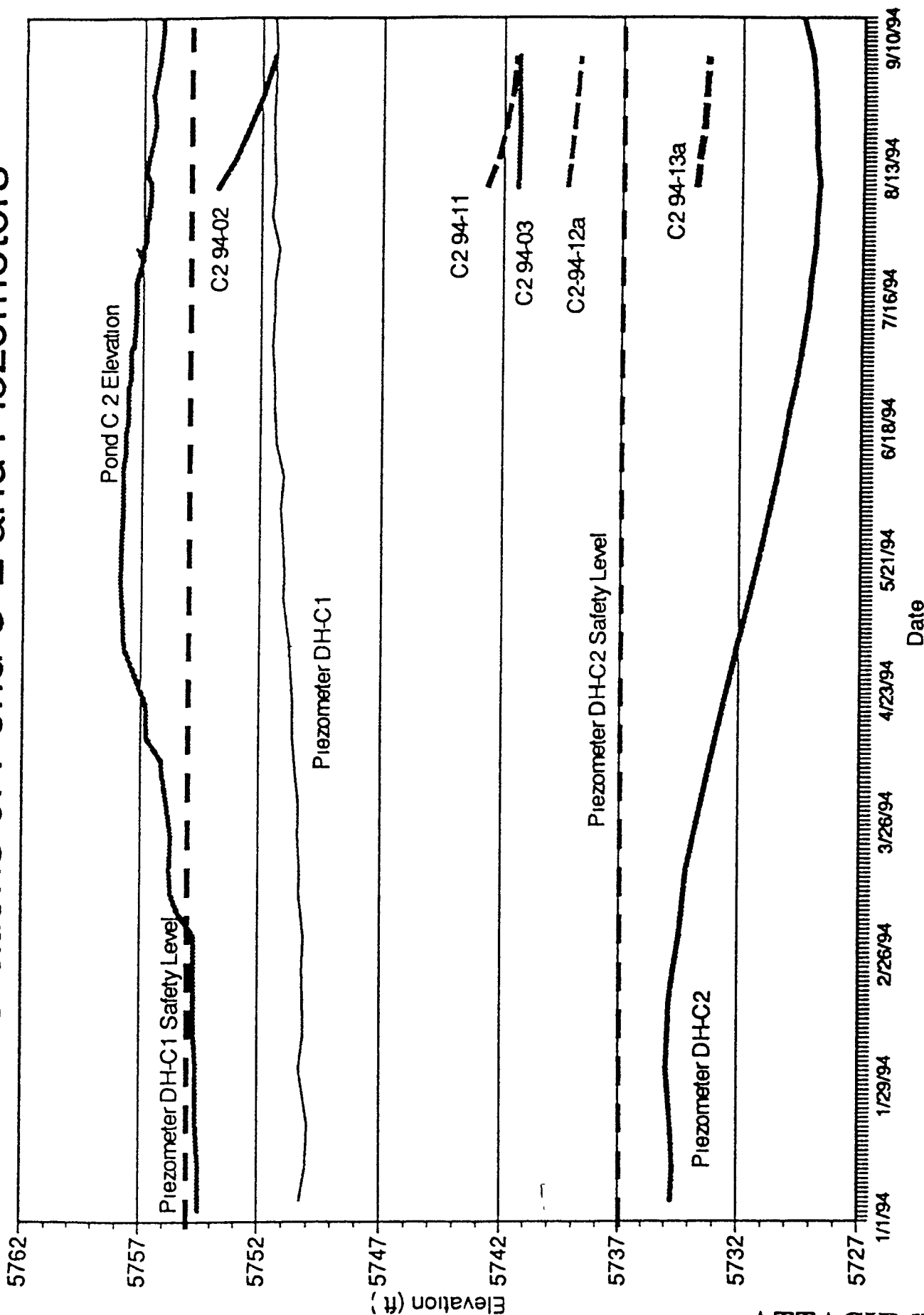
1994 Elevations of Pond B-5 and Crest Piezometers



Piezometer WH-2 is the central crest piezometer Piezometers WH-1 and WH-3 are located north and south of Piezometer WH-2, respectively

SW

1994 Elevations of Pond C-2 and Piezometers



Piezometer DH-C1 is on the crest of the dam, and Piezometer DH-C2 is on the toe of the dam. Both are centrally located

SW

**FEDERAL ENERGY REGULATORY COMMISSION
ANNUAL DAM INSPECTION
SEPTEMBER 29, 1994**

ROCKY FLATS ENVIRONMENTAL TECHNOLOGY SITE

ATTENDEES

Cheryl K Row	DOE RFFO	Site Support & Security
Cliff Franklin	DOE RFFO	Site Support & Security
Pamela A Lee	EG&G	Ecology & Watershed
Management		
Robert J Stevens	EG&G	Watershed Management &
Dam Safety		
James Fitz Simmons	EG&G	Watershed Management &
Dam Safety		
Eric F Mangeot	EG&G	Watershed Management &
Dam Safety		
Diana K Woods	EG&G	Civil Engineering
Cheryl A Sedlmayer	EG&G	Photographic Services
Tilak Dhir	FERC	San Francisco Regional Office